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First record of *Acentrella sinaica* Bogoescu, 1931 in Austria (Insecta: Ephemeroptera: Baetidae)

by
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Abstract: Nymphs of *Acentrella sinaica* were recorded in Austria for the first time. The specimens were found on cobbles and boulders in a fifth-order mountain stream at an elevation of 1020 m above sea level in the crystalline Tauern Alps of Salzburg.
Key words: Insecta, Ephemeroptera, Austria, faunistics

Introduction

The mayfly fauna of Austria is well documented and known to contain 108 species, 26 of which are from Salzburg (Bauernfeind & Weichselbaumer 1994). The present first record was identified from a very large series of samples collected during the ecological part of a river engineering investigation.

This find, from the Lungau in Salzburg, accentuates the necessity of intensive sampling in the course of faunistic surveys: up to the moment when *Acentrella sinaica* was recorded, 427 quantitative samples had been taken in the time period between 1984-1994. Together with the first record of *Arthroplea congener* (Moog & Römer 1995) the total species count of Austrian mayflies is now 110.

Methods and circumstances of the discovery

Quantitative samples across a range of substrate types were collected with a modified Surber-sampler (Type box-sampler, 0.1 m^2 sample area with 100 m mesh size). Species determinations were made by Dr. W. Lechtaler (Vienna): Chironomidae, Dr. M. Car (Brunn): Simuliidae, W. Graf (Vienna): Trichoptera and Dr. F. Sporka (Bratislava): Oligochaeta. The remaining taxa were identified by the authors as well as U. Grasser, K. Grasser, A. Römer and T. Ofenböck.

Following the classification system of Moog & Wimmer (1990, 1994), the Taurach river near the village of Tamsweg is a transition zone between a meta- and a hyporhithral stream of the 5th order with a temperate nivalic flow regime from the cristalline central alps in the "Radstädter Tauern" (Lungau, Salzburg) mountain region.

The location lies in the lower reaches of the Taurach river approximately 30 meters before a diversion weir. The stream is approximately 20 meters wide, is graded and lined with rip-rap, creating a relatively homogenous stretch with a water depth of about 50 cm. The substrate sizes range from boulders (20 to 40 cm) to cobble (6 to 20 cm), and the mean current velocity is 0.5 m/s. The elevation is 1020 m above sea level.

On the 25th of July 1993, a total of 12 larvae and nymphs were collected in the Taurach river just upstream from its confluence with the River Mur near Tamsweg. The mayflies were found not only in the river bed but also on riparian boulders (40 cm). The substrate classification follows the ÖNORM 6232.

Distribution

Acentrella sinaica is distributed throughout the middle and the south of Europe (Sartori 1988) and thus far recorded from Romania (Bogoescu 1931), Italy (Belfiore 1983), southern France (Müller-Liebenau 1974), Belgium (Müller-Liebenau 1980), Switzerland (Riederer 1981), former Czechoslovakia (Soldan 1978) and Poland (Kalmer 1967). Adam (1990) also mentions the Iberian peninsula as a part of its range.

Habitat

A. sinaica is found in rapidly flowing water of the meta- to hyporhithral class (Sowa 1980, Studemann *et al.* 1992). According to Bogoescu and Tabacuru (1957) the larvae live in streams with high flow velocities, where they dwell beneath stones and woody debris. Sartori describes *A. sinaica* as a specialist for disturbed environmental conditions since they were found in Switzerland (Sarine, Epagny) below a power plant. This account is very similar to a find by Thomas (in Müller-Liebenau 1974) from Southern France.

The published accounts so far were all at elevations of 400–940 meters. Kamler (1967) reported on the species distribution in the Polish portion of the Tatra mountains. He found *A. sinaica* to be a frequent member of the benthic community at 680 m, less common at 770 m, and represented by a single specimen at 940 m, in sandy and stony substrates. Studemann *et al.* (1992) reported a distribution between 600 and 800 m.

The collection site in the Taurach river, just upstream from its confluence with the River Mur, strongly corresponds in terms of substrates and current velocities to previously reported sites where *A. sinaica* was collected. However, the elevation of 1200 m above sea level is by far the highest reported so far.

Development

According to Grandi (1960) the species produces only one generation per year. In the middle and lower metarhithral systems the larval stage lasts from April to August and in the upper and middle hyporhithral systems from April to September (Sowa 1980). Studemann *et al.* (1992) describe *A. sinaica* as having univoltine summer cycle (larval development, growth and hatching during summer; overwintering as eggs). The Taurach river was sampled in three seasons (March, July and November 1993) and *A. sinaica* was found only in the summer collections, suggesting that it is a summer species.

Associations

A. sinaica is a typical representative of the rheophilic community. Devan (1984) describes a community with *Rhithrogena hercynia* and *Baetis alpinus*. Müller-Liebenau (1969) reports an association with *Baetis alpinus*, *Rhithrogena semicolorata, Epeorus assimilis* and *Electrogena lateralis*. According to Kownacka (1971) *A. sinaica* appears together with *Baetis scambus, Epeorus sylvicola* and *Rhithrogena loyolea* from 780-900 m elevation.

In the Taurach river, *Baetis alpinus* and *Rhithrogena semicolorata* (Gr.) are the dominant mayfly species of the community. A complete list of the species collected in the Taurach river is given in Table 1.

Table 1. Macrozoobenthos coenosis of the Taurach river in summer 1993.

Tricladida:
Turbellaria

Nematoda

Oligochaeta:
Mermithidae gen sp.
Cernosvitoviella sp.
Tubificidae gen sp.
Lumbricidae gen sp.
Stylodrilus heringianus
Eiseniella tetraedra
Haplotaxis gordioides
Nais communis
Nais stolci
Propappus volki
Fridericia sp.
Enchytraeidae gen sp.

Mollusca:
Ancylus fluviatilis

Ephemeroptera:
Baetis alpinus
Baetis melanonyx
Baetis vernus
Baetis muticus
Baetis rhodani
Ecdyonurus picteti
Rhithrogena hercynia
Rhithrogena grantianopolitana
Rhithrogena podhalensis
Rhithrogena semicolorata
Rhithrogena gr. *semicolorata* juv. sp.

Plecoptera:
Dictyogenus alpinum
Isoperla sp.
Perlodes sp.
Leuctra sp.
Siphonoperla sp.
Protonemura sp.
Nemoura sp.

Coleoptera:
Elmis sp.
Limnius sp.
Limnius perrisi

Trichoptera:
Rhyacophila tristis
Rhyacophila dorsalis
Rhyacophila vulgaris
Rhyacophila obliterata
Rhyacophila cf. *aurata*
Hydropsyche spp.
Ecclisopteryx guttulata
Micrasema minimum
Drusus discolor

Diptera:
Antocha sp.
Hemerodromia sp.
Dicranota sp.
Wiedemannia sp.
Liponeura sp.

Chironomidae:
Diamesa permacer
D. gr. *cinerella/zernyi*
Diamesa spp.
Odontomesa fulva
Cardiocladus spp.
Corynoneura spp.
Cricotopus annulator
Cricotopus curtus
Cricotopus tremulus
Cricotopus spp.
Eukiefferiella devonica/ilkleyensis
Eukiefferiella fittkaui/minor
Eukiefferiella similis
Eukiefferiella brevicalcar
Eukiefferiella tirolensis
Eukiefferiella spp.
Euryhapsis subviridis
Heleniella spp.
Heterotrissocladius cf. *scutellatus*
Orthocladius rivicola
Orthocladius gr. *thienemanni*
Orthocladius frigidus
Orthocladius saxicola
Orthocladius spp.
Paratrichocladius gr. *rufiventris*
Paratrichocladius spp.
Rheosmittia spinicornis
Thienemanniella spp.
Tvetenia calvescens
Tvetenia spp.
Orthocladiinae
Polypedilum scalaenum
Polypedilum spp.
Micropsectra gr. *atrofasciata*
Micropsectra spp.
Tanytarsini

Simuliidae:
Prosimulium hirtipes
Simulium argyreatum
Simulium maximum

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